Feb. 23, 1937. A. E. JESSER 2,071,535

SEALING RING

Filed Dec. 18, 1934

Fig. 1.

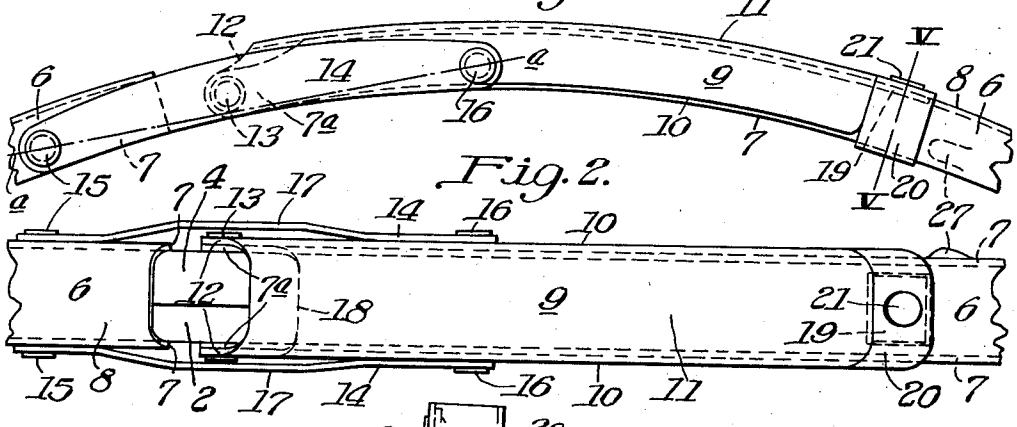


Fig. 2.

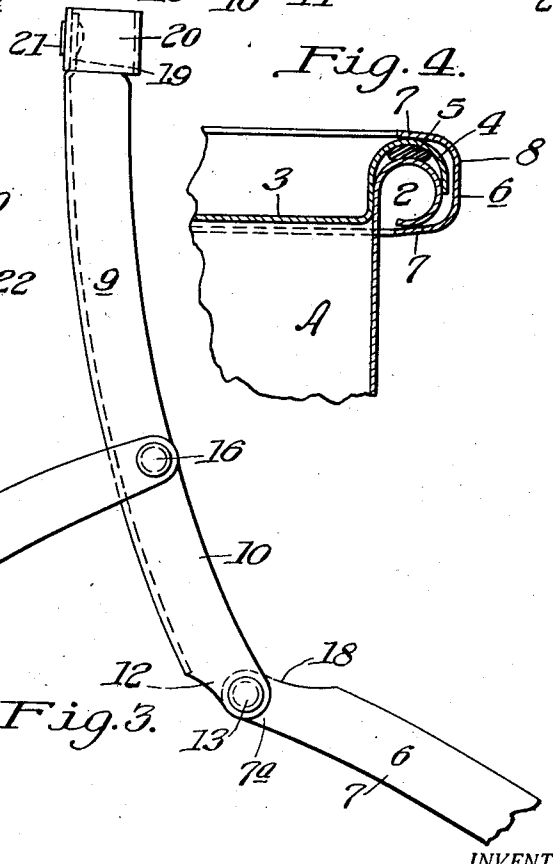


Fig. 4.

Fig. 5.

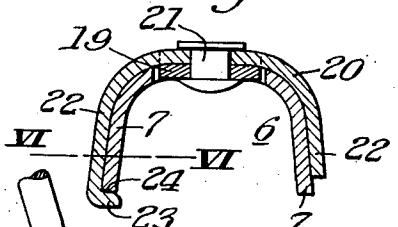


Fig. 6.

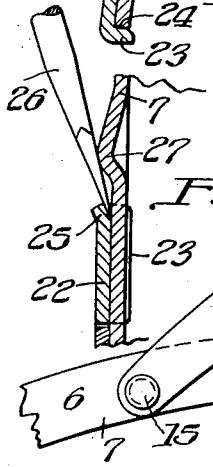


Fig. 3.

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Patented Feb. 23, 1937 2,071,535

UNITED STATES PATENT OFFICE

2,071,535

SEALING RING

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Application December 18, 1934, Serial No. 758,046

11 Claims. (Cl. 220—61)

This invention relates to improvements in sealing rings of the character employed for removably securing the heads or covers of containers and the like.

For example, certain types of shipping drums are formed with an open end closed by a head having telescoping engagement with a circumferential bead or rim about said open end of the drum. An embracing annular member or ring is applied to said head and rim for removably securing the head to the drum.

These members are generally of the split ring type having means at the free ends thereof for closing said ends in clamping relation about the head and container top. Various means have heretofore been employed for applying a clamping and closing pressure to the ring ends, including systems of levers and cooperating linkage. The lever action type of ring in most instances has the lever members thereof either disposed over the head of the container or projecting outwardly beyond the peripheral portion of the ring, thereby interfering with the handling of the container.

For example, in the use of storage drums, it is often desirable to stack the same in interfitting end-to-end relation, which expedient is impossible with the lever rings having the mechanism thereof disposed and operable over the drum head. Likewise, most peripherally located levers interfere with rolling the drum, which operation may also damage the lever mechanism itself.

To obviate these and other objectionable features and defects in the prior art, it is an object of my invention to provide a sealing ring of the lever action type that readily conforms to the outer contour of the joint between the container and its head without any substantial interfering projection therebeyond.

Another object is to provide a ring of the character stated which may be readily applied to a container, and which may be securely fastened in closed position thereon.

Further objects are to provide a sealing ring having a minimum number of parts, and a ring which is capable of economical manufacture.

My invention may be more readily understood by a reference to the following description taken in connection with the accompanying drawing, wherein:

Fig. 1 is a plan view of a portion of a sealing ring embodying my invention, showing the ring in closed position;

Fig. 2, an elevational edgewise view of the outer circumferential portion of Fig. 1;

Fig. 3, a view similar to Fig. 1, showing the ring in open position;

Fig. 4, a detail cross-section taken through a container and its head, showing the manner of application of the ring thereto;

Fig. 5, an enlarged cross-section taken on the line V—V of Fig. 1, showing the lever latching means; and

Fig. 6, a longitudinal section taken along the line VI—VI of Fig. 5.

Referring to the drawing, A designates generally a container, as for example, a steel drum or barrel, formed at its open end or top with a circumferential rolled portion or bead 2. A metal head or cover 3 is provided for closing said container, which head is removable and has an annular grooved or channelled rim 4 for telescoping engagement with the rolled bead 2 of the container, as shown in Fig. 4. 5 designates a ring gasket or packing of suitable material which is disposed between the bead 2 and rim 4.

Embracing the bead and rim for removably securing the head 3 on the container is provided a split ring or annular member 6 of substantially channel or U-shape in cross-section, having spaced flanges 7 on either side of a web or body portion 8 thereof, said ring being preferably formed of resilient metal for exerting a clamping or sealing pressure by its flanges upon the rim 4, the bead 2 and the interposed gasket 5.

My invention has to do with means associated with the ends of the split ring for contracting and securing said ring in place on the container A. Thus, 9 designates a channel-form lever having spaced flanges 10 and an intervening web or body portion 11. One end of said lever has the flanges 10 thereof slightly extended beyond the body 11 to form a bifurcated portion 12 straddling one free end of the ring 6 and transversely pivoted to the opposite flanges 7 thereof by rivets 13, for swinging movement toward and away from said ring.

The longitudinal curvature and cross-sectional dimensions of the lever are designed to provide telescoping engagement over and to substantially conform to the contour of the ring 6, when said lever is closed thereon as in Figs. 1 and 2.

A pair of substantially flat links 14 are provided having an end of each transversely pivoted to a flange 7 of the other ring end as at 15. With the ring 6 and its lever 9 in closed position as in Fig. 1, the links 14 extend from their pivot points 15 flatwise along the ring flanges 7 and lever flanges 10 to a point on the other side of the pivotal point 13 of the lever, where they are transversely piv-

oted by their other ends to said flanges 10 of the lever, as at 16.

Said links are of minimum width to prevent projection thereof beyond the inner and outer peripheral contours of the ring and lever when in closed position. The intermediate portions of the links may be slightly bowed or offset as at 17 in Fig. 2, to prevent interference with the rivets 13 when in motion thereover.

The pivotal points 15 and 16 of the links 14 are disposed on either side of the pivot point 13 of the lever when said lever is closed upon the ring, and the direction or line of reacting pull tending to separate the ring ends passes through said pivot points 15 and 16 of the links, as indicated at *a*—*a* in Fig. 1.

To provide a device which will tend to lock or retain itself in closed position, I prefer to locate the pivot point 13 of the lever outwardly of the line of pull *a*—*a*, in the nature of a toggle joint connection, thereby eliminating any force moment tending to open the linkage when in final closed position on the ring.

Referring particularly to Figs. 4 and 5, I have shown the ring 6 and its lever 9 of channel-form in cross-section, with the respective flanges 7 and 10 thereof preferably slightly divergent for the purpose of affording easier application of the ring over the head rim 4 and the drum bead 2, and for exerting sufficient sealing pressure to insure a tight joint.

To prevent the angularity of the ring and lever flanges resulting in interference with the desired pivotal action of and injury to the lever linkage, particularly as to the bifurcated lever portion 12 which is subjected to a transverse flexing and bending force due to said angularity, I prefer to provide the bifurcated portion 12 of the lever of minimum length, extending only far enough beyond the body 11 thereof to permit pivotal movement of said lever to take place over the ring end on which it is mounted by the rivets 13.

In addition, the said ring end is weakened by cutting away a portion 18 of the web of body 8 thereof, leaving the extended flanges 7*a* for connection with said rivets 13. Since the portion 12 of the lever is strengthened to resist the flexing and bending forces produced, the burden thereof is transferred to the relatively weaker ring flange portions 7*a*. At the moment of greatest force which occurs upon tightening or closing movement of the lever on its ring end, the direction of said force is longitudinally of said portions 7*a* and said force is therefore absorbed throughout the metal of the ring flanges 7 without causing injury to the lever connection.

For the purpose of securing the lever 9 to the ring 6 in closed position thereon, as against accidental opening during the handling or rolling of the drum, said lever is preferably provided with an extended inwardly offset tang 19 at its terminal end, over which is secured a resilient U-shaped clip or latch 20 by a rivet 21 passed through the tang and the body portion of the clip.

Said latch preferably has spaced flanges 22 for telescoping over and adapted for frictional gripping contact with the flanges 7 of the ring 6 when the lever 9 is closed thereon. In addition, one of said flanges is provided with a terminal angular flange 23 for locking engagement behind or over the inner annular edge 24 of the ring flange 7 with which said latch flange contacts.

The latch may be disengaged from the ring by prying or otherwise displacing the flange 23 out of engagement with the edge 24 of the ring flange 7. To assist the disengagement, the outermost edge of the latch flange 22 on which the locking flange 23 is formed may be outwardly flared, as at 25, whereby to permit ready insertion of a screw driver 26 or other tool between said portion 25 and the ring flange 7. Also, a projecting fulcrum button or abutment 27 may be raised in the ring flange 7 adjacent the point of engagement of the latch with said flange, to assist in said disengagement.

From the foregoing it will be seen that I have provided a sealing ring construction of the character stated, wherein a simple and efficient closure linkage is provided which does not have interfering projection preventing customary handling of the containers to which it may be applied. Further, I have provided a linkage construction which will be securely locked in closed position against accidental opening, but which may be readily opened when desired.

Various changes and modifications are contemplated within the scope of the following claims.

I claim:

1. In a device of the character described, a split ring of channel form including spaced-apart flanges, a channel form lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivoted by its flanges to the flanges of said ring end for swinging movement toward and away from the ring, a pair of links having an end of each pivotally connected to a flange of the other ring end, the other end of each being pivoted to a flange of the lever, said links lying substantially flat along the ring and lever flanges without projection beyond the inner and outer peripheral contours of said ring and lever when in closed position, and means for removably securing the lever in closed position on said ring.

2. In a device of the character described, a split ring of channel form including spaced-apart flanges, a channel form lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivoted by its flanges to the flanges of said ring end for swinging movement toward and away from the ring, a pair of links having an end of each pivotally connected to a flange of the other ring end, the other end of each being pivoted to a flange of the lever, the pivot point of the lever being outwardly of the line of pull of the ring when in closed position, whereby the ring, lever and links are retained in closed position, said links extending along the ring and lever flanges without projection beyond the inner end outer peripheral contours thereof.

3. In a device of the character described, a split ring of channel form including spaced-apart flanges, a channel form lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivoted by its flanges to the flanges of said ring end for swinging movement toward and away from the ring, a pair of links having an end of each pivotally connected to a flange of the other ring end, the other end of each being pivoted to a flange of the lever, the pivot point of the lever being outwardly of the line of pull of the ring when in closed position, whereby the ring, lever and links are retained in closed position, said links extending along the ring and lever flanges without projection beyond the inner and outer peripheral contours thereof, and means for securing the lever and ring in closed position.

4. In a device of the character described, a split

ring of channel form including spaced divergent flanges, a channel form lever having spaced divergent flanges for telescoping engagement with one end of the ring, said lever being transversely pivoted by extended portions of its flanges to extended portions of the flanges of said ring end for swinging movement toward and away from the ring, links pivotally connected with the flanges of the other ring end and of said lever, the extensions of the lever flanges being relatively stronger than the extended portions of the ring flanges, whereby the bending forces caused by the angularity of the said divergent flanges during movement of the lever will be transmitted to the ring flanges and there absorbed without injury to the lever connection, and means for removably securing the lever in closed position on said ring.

5. In a device of the character described, a split ring of channel form having spaced-apart flanges, a channel form lever connected with one end of the ring for swinging movement toward and away from the ring, a pair of links pivotally connected with the other ring end and said lever, and a latch member movable with the lever and having means thereon cooperating with a flange of the ring for removably securing the lever in closed position on said ring.

6. In a device of the character described, a split ring of channel form having spaced-apart flanges, a channel form lever connected with one end of the ring for swinging movement toward and away from the ring, a pair of links pivotally connected with the other ring end and said lever, and a latch member movable with the lever and having means thereon for engagement behind the inner annular edge of a flange of the ring, for removably securing the lever in closed position on said ring.

7. In a device of the character described, a split ring of channel form having spaced-apart flanges, a lever connected with one end of the ring for movement toward and away from the ring, a pair of links pivotally connected with the other ring end and said lever, and a U-shaped resilient latch member on the lever for embracing frictional contact with the ring when the lever is closed thereon, said latch having an angular flange for engagement behind the inner annular edge of a flange of the ring.

8. In a device of the character described, a split ring of channel form including spaced-apart flanges, a channel form lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivoted by its flanges to the flanges of said ring end for movement toward and away from the ring, a pair of links having an end of each pivotally connected to a flange of the other ring end, the other end of each being pivoted to a flange of the lever, said links lying substantially flat along the ring and lever flanges without projection beyond the inner and outer peripheral contours of said ring and lever when in closed position, and a latch member on the lever having means thereon cooperating with the inner annular edge of a flange of the ring for removably securing the lever in closed position on said ring.

9. In a device of the character described, a split ring of channel form including spaced apart flanges, a lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivotally connected to said ring end for swinging movement toward and away from the ring, linkage pivotally connected to the other ring end, said linkage at its opposite end being pivoted to the lever, said linkage extending along the ring and lever flanges without interfering projection beyond the same when in closed position.

10. In a device of the character described, a split ring including spaced apart flanges, a lever having a portion of its inside contour substantially complemental with the exterior of the ring for telescoping engagement with one end of the ring, said lever being pivotally connected to said ring end for swinging movement toward and away from the ring, linkage extending along the sides of the ring and lever and pivotally connected to the other ring end, said linkage at its opposite end pivoted to the lever, said linkage being disposed relative to the sides of the ring and lever without interfering projection beyond said sides when in closed position.

11. In a device of the character described, a split ring of channel form including spaced-apart flanges, a channel form lever having spaced flanges for telescoping engagement with one end of the ring, said lever being pivoted by its flanges to the flanges of said ring end for swinging movement toward and away from the ring, a pair of links having an end of each pivotally connected to a flange of the other ring end, the other end of each being pivoted to a flange of the lever, said links lying substantially flat along the ring and lever flanges without projection beyond the inner and outer peripheral contours of said ring and lever when in closed position.

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